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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,762	10/14/2003	Larry J. Ashton	2029.2.3.2	3344

21552 7590 10/19/2005

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EXAMINER	
AFTERGUT, JEFF H	

ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

1.4✓

Office Action Summary	**Application No.** 10/684,762	**Applicant(s)** ASHTON ET AL.	
	Examiner Jeff H. Aftergut	**Art Unit** 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6-21-04.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

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Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 4, 6, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Futakuchi et al.

Futakuchi et al suggested that those skilled in the art would have known to form a perform by filament winding a resin impregnated fiber material which was solid or semisolid at ambient temperature (note that the claims do not require that the resin be in a solid or semisolid state during the impregnation and in fact applicant's themselves applied heat to the resin in order to reduce the viscosity of the same to render it acceptable for impregnations). The reference suggested that those skilled in the art would have wound the filaments at a first angle upon a mandrel followed by application of a second filament at a second angle which intersected the first angle. It should be noted that the angles which are referred to in Futakuchi et al included +60 degrees, -60 degrees and 0 degrees as well as 90 degrees and 0 degrees. The reference suggested that subsequent to the winding operation, the rotation of the mandrel was stopped and the resin impregnated wound material was cut along the rotational axis of the mandrel to provide a sheet of the wound material which was suitable for reshaping into a molded article having the reinforcing fibers disposed in the specific orientation and providing the finished assembly with the requisite reinforcement therein. The reference clearly controlled the application of the filaments with the filament winding operation. the reference suggested plural overlapping sections as well as completely impregnating the filaments with the same amount of resin therein wherein the overlaps as well as the first and second wound sections would have had the same amount of resin therein.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futakuchi et al in view of Angell, Jr. et al and Novak.

The applicant is referred to paragraph 2 above regarding Futakuchi et al. the reference taught the same processing performed by applicant. It should be noted that the resin was a thermoset resin and that this form of resin is typically applied to the fibers and b-staged (partially cured to a semi-hardened state) followed by object formation and final curing (c-staging). The reference did not state that the filaments would have been impregnated with resin which was already in a semi-hardened state (via a heating operation wherein the resins viscosity was reduced and the filaments infused with the resin). The references did state that the filaments could either be preimpregnated or they could be impregnated in the line where the filament winding took place.

The reference to Angell Jr. et al suggested that those skilled in the art would have incorporated a resin which was of a hot melt type of thermosetting resin (wherein the same was applied to the fibers as a heated material) in order to eliminate concerns regarding volatiles which result in defective finished products as such included voids after cure. The reference taught that the filaments should be impregnated with a hot melt type of thermoset resin wherein no volatiles would be present and wherein one heated the resin only a limited amount in order to avoid cure of the resin therein. It should be noted that subsequent to the application of the resin to the fibers in Angell, et al, the reference taught that the resin was in a semisolid state, see column 3, lines 3-11, for example. Clearly, it would have been understood that prior to the heating step the resin was in a semisolid condition and was reverted back to the same subsequent to cool down at ambient temperature in Angell, et al. to further evidence the same, the reference to Novak is cited. The reference to Novak suggested that those skilled in the art would have also recognized the advantages of employing a solid or semisolid resin material to impregnate filaments therein. The reference to Novak identified the same void free manufacture as a desirable use of a solid or semisolid for the form of the resin therein, see column 1, lines 31-60. the reference clearly suggested that the resin employed was one which was heated in order to facilitate impregnation (much like Angell, et al) and that this type of resin was in a solid or semisolid state at room temperature, see column 3, lines 50-65. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a resin which was solid or semisolid at room temperature and utilize the same to impregnate the filaments in

Futakuchi et al as such would have eliminated volatiles (solvents) and would have resulted in a finished end product which was free of voids as suggested by Angell, Jr. et al and Novak.

With respect to claim 9, applicant is advised that those skilled in the art in light of the teachings of Futakuchi et al would have understood that individual parts would have been provided with individualized reinforcement therein and that the placement of the filamentary reinforcement in the winding operation would have resulted in a part with specific load handling capabilities. While the reference did not identify a specific load requirement for a component, one skilled in the art would have performed the same in composite manufacture and such is taken as conventional in the art. Additionally, mapping out where the reinforcement must be would have been the means performed to ensure that the part being made satisfied the known load requirements and is likewise taken as conventional in the art. The applicant is additionally advised that one skilled in the art would have known how to design to manufacture specific composite parts based upon the load requirements of the same. Regarding claim 2, note that Futakuchi et al suggested that the use of angles which were orthogonal to each other (0 and 90 degrees) was known, see column 2, lines 3-19. Regarding claim 10, note that the reference suggested the use of three different angles for the fiber layers therein. regarding claim 12, note that Futakuchi et al suggested cutting the sheet from the mandrel and shaping the same in a molding operation. regarding claim 13, note that one skilled in the art would have understood that plural performs could be provided with a single mandrel depending upon the size of the mandrel wherein one skilled in the art severed from the mandrel plural sheets therefrom. Such is taken as conventional in the art of perform manufacture. Regarding claim 14, note that the Futakuchi et al suggested that a sheet was formed from the mandrel windings.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with any one of Carter, Young, Underwood or Hof.

While the references as set forth above in paragraph 4 suggested the overall operation, they failed to expressly state that one skilled in the art would have incorporated a filament winding operation wherein the impregnation device was part of the carriage arrangement therein. However, those skilled in the art of filament winding would have known to provide for the impregnation of the filaments with the reciprocating carriage for the winding arrangement as such was known per se in the art of filament winding as established by any one of Carter, Young, Underwood or Hof. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a filament impregnation device as part of a carriage in a filament winding device as such was the common manner for filament winding with wet filaments as established by any one of Carter, Young, Underwood or Hof and the processing would have provided for in line impregnation of the filaments therein in the process of making a composite article as set forth above in paragraph 4.

Carter taught the use of a resin bath 27 which was carried on a carriage 8 into which the filament strands 26 from spools 25 were disposed in order to form an impregnated band 28 for winding upon a mandrel. Young taught the use of an impregnation device including the funnel member 45 which was carried by the reciprocating carriage and which was used in the winding of the impregnated filaments upon a mandrel. Underwood taught the use of a bath 22 with an impregnating roll 21 which was used to impregnate filaments to form an impregnated band 24 which was wound upon a mandrel wherein the arrangement was disposed on a carriage 11 which was reciprocated for the winding operation. Hof suggested an impregnation bath 11 through which the filaments pass in order to impregnate the same with resin wherein the trough 11 was disposed upon the reciprocating carriage 7 therein.

6. Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with McKinney.

The references as set forth above in paragraph 4 suggested that one skilled in the art would have designed the part as a function of the desired load requirements of the part and placed the filaments in such orientations as needed. Such is recognized in the art as typical of composite manufacture. To further evidence that one skilled in the art would have performed the same via filament winding wherein plural parts were formed simultaneously, the reference to McKinney is cited. The reference clearly suggested that those skilled in the art would have provided for the application of filaments at varied orientations in order to allow one skilled in the art with the ability to make specific parts on a mandrel which satisfy the load requirements of the finished assembly. It should be noted that that in McKinney there are multiple panels which were fabricated on the mandrel and shaped thereon and then cut from the mandrel. Additionally, the winding angle was designed in order to provide a wing or stabilizer with a specific strength to weight ratio. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of McKinney in order to design the specific part to be made by controlling the specific winding angles in the process of making a wound perform for a composite article as taught by the references as set forth above in paragraph 4.

Note that while McKinney did not teach that the material was severed from the mandrel prior to shaping and curing the material, the reference clearly provided additional shaping prior to removal from the mandrel and the reference to Futakuchi et al clearly provided for severing prior to shaping.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
October 14, 2005